

AN 119:43357 CA Full-text

OREF 119:7763a, 7766a

TI Insecticides containing salts coated with polyhydric alcohol fatty acid esters or phospholipids

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SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 05039206	A	19930219	JP 1991-196394	19910806 <--
PRAI JP 1991-196394		19910806		

AB Insecticides comprise 100 weight parts  $\geq 1$  powdered compds. chosen from water-soluble (hydrogen) carbonate salts, chlorides, phosphate salts, and sulfate salts coated with 0.1-10 weight parts aliphatic polyhydric alc. fatty acid esters and/or phospholipids. Diglycerin laurate (2 g) in acetone was mixed with 80 g NaHCO<sub>3</sub> fine powder, evaporated, and mixed with 10 g Na caseinate to prepare a wettable powder with good fluidity. The powder (at 500 ppm) showed 98% control of green peach aphid, vs. 51% for NaHCO<sub>3</sub> without coating.

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

AN 1993-096726 [199312] WPIDS Full-text  
DNC C1993-042811 [199321]  
TI Insecticidal compsns. which do not chemically injure plants and animals - containing aliphatic polyvalent alcohol fatty acid ester(s) coating one of water-soluble carbonate, bi:carbonate, chloride, phosphate and sulphate  
DC C03  
IN ARIMOTO Y; HONMA Y  
PA (RIKA-C) RIKAGAKU KENKYUSHO  
CYC 1  
PI JP 05039206 A 19930219 (199312)\* JA 7[0] <--  
ADT JP 05039206 A JP 1991-196394 19910806  
PRAI JP 1991-196394 19910806  
IPCR A01N0025-26 [I,A]; A01N0025-26 [I,C]; A01N0037-02 [I,A]; A01N0037-02 [I,C]; A01N0057-00 [I,C]; A01N0057-10 [I,A]; A01N0059-00 [I,A]; A01N0059-00 [I,C]; A01N0059-08 [I,A]; A01N0059-08 [I,C]  
FCL A01N0025-26; A01N0059-00; A01N0059-00 C; A01N0059-08 Z  
Index: A01N0037:02; A01N0057:10  
FTRM 4H011; 4H011/AC01; 4H011/AC04; 4H011/BA02; 4H011/BB18; 4H011/BC06; 4H011/BC08; 4H011/BC17; 4H011/BC19; 4H011/DA21; 4H011/DC09; 4H011/DC10; 4H011/DE15; 4H011/DF04; 4H011/DG05; 4H011/DH12  
AB JP 05039206 A UPAB: 20060107  
The compsns. are composed of 100 pts. weight of a powder of at least one of water-soluble carbonates, bicarbonates, chlorides, phosphates and sulphates coated with 0.1-10 pts. weight of one or more aliphatic polyvalent alcohol fatty acid esters. Water-soluble powder of carbonates, bicarbonates, chlorides, phosphates and sulphates (e.g. Na<sub>2</sub>CO<sub>3</sub>, K<sub>2</sub>CO<sub>3</sub>, (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>, NaHCO<sub>3</sub>, NH<sub>4</sub>HCO<sub>3</sub>, NaCl, KCl, CaCl<sub>2</sub>, MgCl<sub>2</sub>, Na<sub>2</sub>HPO<sub>4</sub>, NaH<sub>2</sub>PO<sub>4</sub>, KH<sub>2</sub>PO<sub>4</sub> and CuSO<sub>4</sub>) having a particle size of less than 100 mesh are used singly or in combination. The salts are coated with aliphatic polyvalent alcohol fatty acid esters (e.g. alcohols of glycerin, propylene glycol, sorbitol and sorbitan with fatty acids of 8-22C saturated fatty acids of caprylic, capric, lauric, myristic and stearic acid, unsatd. fatty acids of oleic, linoleic, linolenic and ricinoleic acid, and other natural fat derived fatty acids) to give particles of about 200-400 mesh. The coated particles are used to prepare conventional compsns. (e.g. water dispersible powder compsn.) using suitable carriers opt. together with adjuvants (e.g. wetting agents, surfactants and adhesive agent(s)).  
USE/ADVANTAGE - Insecticidal compsns. are used against insect pests (e.g. aphids, scales and acarina) in low concns. without chemical injury to plants and animals including human beings. - In an example, in 100ml of acetone, 2g of diglycerin laurate were dissolved and 80g of NaHCO<sub>3</sub> containing 90% or more particles of less than 100 mesh were added and evaporated with stirring to give particles. The resultant particles were mixed with 10g of sodium casein powder to increase fluidity. The compsn. exhibited 98% insecticidal effect against green peach aphids at a concentration of 500 ppm while compsns. without coating showed insecticidal effects of 20-51% with  
FS CPI  
MC CPI: C05-B02A3; C05-C04; C05-C05; C05-C07; C07-A02; C10-A07; C10-G02; C12-B04; C12-N02

## INSECTICIDE

**Publication number:** JP5039206 (A)

**Publication date:** 1993-02-19

**Inventor(s):** HONMA YASUO; ARIMOTO YUTAKA +

**Applicant(s):** RIKAGAKU KENKYUSHO +

**Classification:**

- **international:** A01N25/26; A01N37/02; A01N57/10; A01N59/00; A01N59/08; A01N25/26;  
A01N37/02; A01N57/00; A01N59/00; A01N59/08; (IPC1-7): A01N25/26; A01N59/00;  
A01N59/08

- **European:**

**Application number:** JP19910196394 19910806

**Priority number(s):** JP19910196394 19910806

### Abstract of JP 5039206 (A)

PURPOSE: To provide an insecticide effective at low concentrations for such insect pests as aphid, scales and mite, also high in the safety for humans, animals and plants. CONSTITUTION: The objective insecticide can be obtained by coating (A) 100 pts.wt. of powder of at least one compound selected from water-soluble carbonates, water-soluble bicarbonates, water-soluble chlorides, water-soluble phosphates and water-soluble sulfates with (B) 0.1-10 pts.wt. of at least one kind of substance selected from fatty acid esters of aliphatic polyhydric alcohols and phospholipids.

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# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-039206

(43)Date of publication of application : 19.02.1993

(51)Int.Cl.

A01N 59/08  
A01N 25/26  
A01N 59/00  
//(A01N 59/00  
A01N 37:02  
A01N 57:10 )

(21)Application number : 03-196394

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(22)Date of filing : 06.08.1991

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ARIMOTO YUTAKA

## (54) INSECTICIDE

### (57)Abstract:

PURPOSE: To provide an insecticide effective at low concentrations for such insect pests as aphid, scales and mite, also high in the safety for humans, animals and plants.

CONSTITUTION: The objective insecticide can be obtained by coating (A) 100 pts.wt. of powder of at least one compound selected from water-soluble carbonates, water-soluble bicarbonates, water-soluble chlorides, water-soluble phosphates and water-soluble sulfates with (B) 0.1-10 pts.wt. of at least one kind of substance selected from fatty acid esters of aliphatic polyhydric alcohols and phospholipids.

# Machine translation JP5039206

- (19) **Publication country** Japan Patent Office (JP)  
(12) **Kind of official gazette** Open patent official report (A)  
(11) **Publication No.** JP,5-39206,A  
(43) **Date of Publication** February 19, Heisei 5 (1993)  
(54) **Title of the Invention** Insecticide  
(51) **The 5th edition of International Patent Classification**

A01N 59/08 Z 7106-4H  
25/26 6742-4H  
59/00 C 7106-4H  
//(A01N 59/00  
37:02 8930-4H  
57:10 )

**Request for Examination** Un-asking.

**The number of claims** 1

**Number of Pages** 7

(21) **Application number** Japanese Patent Application No. 3-196394

(22) **Filing date** August 6, Heisei 3 (1991)

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**Identification Number** 000006792

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(57) **Abstract**

**Objects of the Invention** There is the insect-killing effectiveness by low concentration to various kinds of noxious insects, such as an aphid, a scale insect, and ticks, and, moreover, offer an insecticide with high safety to the body, or \*\* and vegetation.

**Elements of the Invention** The insecticide characterized for the powder 100 weight section of at least one sort of compounds chosen from the group which consists of a carbonate, a water-soluble bicarbonate, a water-soluble chloride, water-soluble, water-soluble phosphate, and a water-soluble, water-soluble sulfate by one sort or coating **of the fatty acid ester of aliphatic series polyhydric alcohol, or phospholipid** two or more sorts with 0.1 - 10 weight section.

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**Claim(s)**

**Claim 1** The insecticide characterized for the powder 100 weight section of at least one sort of compounds chosen from the group which consists of a carbonate, a water-soluble bicarbonate, a water-soluble chloride, water-soluble, water-soluble phosphate, and a water-soluble, water-soluble sulfate by one sort or coating **of the fatty acid ester of aliphatic series polyhydric alcohol, or phospholipid** two or more sorts with 0.1 - 10 weight section.

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## **Detailed Description of the Invention**

**0001**

**Industrial Application** This invention relates to the insecticide with which low concentration also fully demonstrates effectiveness from the conventional operating concentration.

**0002**

**Description of the Prior Art** Although a heavy metal compound like mercurial and an arsenical as agricultural-chemicals pharmaceutical preparation and organic chlorine-based drugs, and organic phosphorus system drugs have been used widely conventionally, each of these drugs is harmful to the body or an animal, and the environmental pollution by using effective doses, such as contamination to soil, serves as a serious social problem.

**0003** From such the present condition, the germicide which uses the fatty acid ester and the sodium hydrogencarbonate of aliphatic series polyhydric alcohol as a principal component has the prevention effectiveness to various plant disease and a fruits post-harvest disease, and, moreover, JP,57-48525,B teaches that safety is high to the body, or \*\* and vegetation. However, in order to obtain effective drug effect with irrelevance comparable as the conventional thing, when the agricultural chemicals manufactured by this approach needed to be used by high concentration and it was going to press down concentration low conversely, if it was not used so much, they had the fault that drug effect did not appear.

**0004** That such a fault should be removed, although this invention persons invented agricultural-chemicals pharmaceutical preparation (JP,63-233902,A), the effectiveness was not satisfactory in respect of effectiveness falling etc., when it was restricted when active principle concentration was comparatively high, and the generating situation of disease became intense. Moreover, these agricultural-chemicals pharmaceutical preparation has the insect-killing effectiveness by low concentration to various kinds of noxious insects for the purpose of sterilization, and the insecticide with high safety is not known to the body, or \*\* and vegetation.

**0005**

**Problem(s) to be Solved by the Invention** Therefore, the purpose of this invention is there being the insect-killing effectiveness by low concentration to various kinds of noxious insects, and offering an insecticide with high safety to the body, or \*\* and vegetation moreover.

**0006**

**Means for Solving the Problem** The purpose of this invention is attained by the insecticide characterized by one sort or coating **of the fatty acid ester of aliphatic series polyhydric alcohol, or phospholipid** two or more sorts with 0.1 - 10 weight section in the powder 100 weight section of at least one sort of compounds chosen from the group which consists of a carbonate, a water-soluble bicarbonate, a water-soluble chloride, water-soluble, water-soluble phosphate, and a water-soluble, water-soluble sulfate.

**0007** Two or more sorts of 0.1 - 10 weight sections are dissolved in a suitable solvent (for example, acetone), and the insecticide of this invention is manufactured by distilling off a solvent, one sort of the fatty acid ester of aliphatic series polyhydric alcohol, or phospholipid, or after adding the powder-like carbonate, bicarbonate, chloride, phosphate, or sulfate 100 weight section and carrying out churning mixing. A copper sulfate etc. is mentioned, if potassium carbonate, a sodium carbonate, an ammonium carbonate, etc. consider as the example of a water-soluble bicarbonate and potassium bicarbonate, sodium bicarbonate, ammonium bicarbonate, etc. consider **potassium chloride, a sodium chloride, a calcium chloride, a magnesium chloride, etc. / disodium hydrogenphosphate, a sodium dihydrogenphosphate, the potassium phosphate, a potassium dihydrogenphosphate, etc.** as a water-soluble sulfate as water-soluble phosphate as an example of a water-soluble chloride as an example of the water-soluble carbonate used in this invention. These may be used independently or may use two or more sorts together.

**0008** As aliphatic series polyhydric alcohol which constitutes the polyhydric-alcohol fatty acid ester used in this invention, although the aliphatic series polyhydric alcohol of the saturation of the carbon atomic numbers 3-6 or partial saturation is desirable, a glycerol, propylene glycol, a sorbitol, sorbitan, etc. are especially suitable. On the other hand, as a fatty-acid component which constitutes polyhydric-alcohol fatty acid ester, the fatty acid of the natural-animal-and-plant-oil fat origins, such as cotton seed oil, an others and mixing fatty acid, for example, beef tallow, oleum rapae, and hardened oil, is used. **fatty acids /, such as the saturated fatty acid of the carbon atomic numbers 8-22 for example, a caprylic acid, a capric acid, a lauric acid, a myristic acid, a palmitic acid, stearic acid, arachin acid, behenic acid or**

**unsaturated fatty acid for example, oleic acid, linolic acid, a linolenic acid and a RISHINOREN acid, / single**

**0009** The polyhydric-alcohol fatty acid ester used in this invention is Monod and G which are obtained esterification or by carrying out an ester interchange by the approach usual with the above-mentioned fatty acid in the above-mentioned aliphatic series polyhydric alcohol, or Toriester. Especially, sorbitan monolaurate, sorbitan monostearate, diglycerol laurate, a glycerol mono-KAPURI rate, a diglycerol KAPURI rate, deca glycerol laurate, glycerol monooleate, glycerol mono-octoate, glycerol mono-soybean-oil fatty acid ester, glycerol mono-cotton-seed-oil fatty acid ester, triglycerol monooleate, glycerol monopalmitate, polyglyceryl fatty acid ester, etc. are suitable.

**0010** Moreover, as phospholipid, the vegetable lecithin separated from vegetable oil or yolk lecithin and the phosphatidylcholine separated from these, phosphatidylethanolamine, phosphatidylinositol, etc. are suitable. In this invention, the blending ratio of coal with the fatty acid ester of aliphatic series polyhydric alcohol or phospholipid and a water-soluble carbonate, a bicarbonate, a chloride, phosphate, or a sulfate needs to consider as the water-soluble carbonate, bicarbonate, chloride, phosphate, or sulfate 100 weight section to this ester or phospholipid 0.1 - 10 weight sections.

**0011** When using this insecticide at this time out of range, diluting it with water, following unarranging arises. That is, an emulsion is not effectively obtained for this ester or phospholipid under in the 0.1 weight section. On the other hand, since ester or phospholipid dissociates and the coating film cannot be maintained if this ester or phospholipid exceeds 10 weight sections, an emulsion is not obtained effectively in many cases.

**0012** Since it is difficult for it to maintain the coating film when the particle size of the powder of a water-soluble carbonate, a bicarbonate, a chloride, phosphate, and a sulfate has a too large particle size, it is desirable to use what passes 100 meshes. Moreover, when particle size was too small and a coating agent is manufactured, since there is an inclination for the concentration to expect not to be obtained, it is desirable to use what does not pass 400 meshes. Especially a desirable particle size is 200-400 meshes.

**0013** In the insecticide of this invention, it can add suitably, and the surfactant which does not destroy emulsions, such as the adjuvant currently generally used for the agricultural-chemicals constituent, for example, a spreader, a \*\* exhibition agent, and a binder, can also be pharmaceutical-preparation-ized to it. Moreover, spraying concentration is about 1-500 ppm, although it changes with active principles and is not limited especially. It is used suitably.

**0014** Especially the noxious insect to which the insecticide of this invention is applied is a vegetable noxious insect, and is a noxious insect which especially sips vegetable sap and lives. An aphid, a scale insect, ticks, etc. are mentioned as a typical example of such a noxious insect. Although spraying directly is most effective for a noxious insect as for the insecticide of this invention, before a noxious insect adheres to a plant body, it may be beforehand sprayed on a plant body. The reason the insecticide of this invention shows the insect-killing effectiveness by low concentration extremely is considered as follows.

**0015** The insecticide which coated active principle powder is fabricated as water dispersible powder, as shown in the below-mentioned example. If this water dispersible powder is distributed underwater, water will permeate the interior through coating, will dissolve the powder of a water-soluble active principle, and the thick solution of an active principle will generate inside. Also when the vesicle which connotes this thick solution exists in stability in dispersion liquid and it sprays on a plant body, a vesicle exists on the surface of a plant body as it is, without being destroyed. However, since the body surface of a noxious insect is oleophilic, if a vesicle contacts the body surface of a noxious insect, a vesicle is destroyed, and an internal thick solution will leak out, it will contact with a noxious insect, and a noxious insect will become extinct. Thus, the insecticide of this invention is destroyed only when the vesicle which contains the thick solution of an active principle when using this as water dispersible powder contacts with a noxious insect, and it is thought that the insect-killing effectiveness is demonstrated very effectively.

**0016** Next, although an example is given about the constituent of this invention, this invention is not limited at all by this.

Example-1 diglycerol laurate 2g is dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of a sodium hydrogencarbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

1g of example-2 polyglyceryl fatty acid ester is dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of a sodium hydrogencarbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it considers as powder, and is improved as water dispersible powder.

Example-3 diglycerol laurate 1g is dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of a sodium carbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example-4 glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of potassium carbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example-5 glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of an ammonium carbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example-6 glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of an ammonium hydrogencarbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example-7 glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of a potassium hydrogencarbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example-8 glycerol monooleate 2.5g and glycerol mono-octoate 1.5g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of potassium chloride is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example-9 glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of a sodium chloride is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

## **0017**

**Effect of the Invention** The insecticide of this invention has the insect-killing effectiveness by low concentration to various kinds of noxious insects, such as an aphid, a scale insect, and ticks, and, moreover, its safety is high to the body, or \*\* and vegetation.

It compared with the agricultural-chemicals pharmaceutical preparation (JP,63-233902,A) have been applied for whose effectiveness of the various carbonates of one to example of trial 9 this invention, a hydrogencarbonate, a chloride, and a sulfate coating agent water solution, and the conventional drugs water solution.

**0018** A comparison is 500 ppm about each drugs. And 200 ppm While preparing the thing of concentration, spraying on the cucumber green peach aphid (scientific name: *Myzus persicae* Sulzer, an English name :Green peach aphid) and computing the rate of insect killing on the 2nd (%), it carried out by observing the existence of phytotoxicity. 200 ppm The rate of insect killing about the pharmaceutical preparation of concentration is shown in ( ), and it is 500 ppm about phytotoxicity. Since the same effectiveness as a thing was acquired, it indicated collectively.

**0019** The effectiveness when spraying what does not contain drugs was indicated in the column of contrast for the comparison. Preparation of each coating agent was performed as follows.

The example of a trial The method of preparation 1 of each coating agent An example 12 The

approach 3 according to an example 1 An example 44 An example 55 An example 96 An example 87 The approach 8 according to an example 1 approach 9 according to the example 1 each coating agent by approach this invention according to an example 1 -- a conventional drugs water solution or agricultural-chemicals pharmaceutical preparation -- comparing -- 200 ppm And 500 ppm etc. -- even if it used it by low concentration, it turned out that the rate of insect killing improves remarkably and is effective.

**0020** A result is shown in the 1st table.

1st Table Cucumber Green-Peach-Aphid Depressor Effect ----- of Various Coating Agents \*\* Trial Medicine Agent Concentration Rate of Insect Killing Medicine Damage (Ppm) (%)

-----	-----	NaHCO <sub>3</sub> Coating agent 500 (200) 98 (70) Example of nothing trial 1	NaHCO <sub>3</sub> Pharmaceutical preparation 500 (200) 51 (32) ** NaHCO <sub>3</sub> 500 (200) 20 (10) **
-----	-----	CaCO <sub>3</sub> Coating agent 500 (200) 75 (52) Example of ** trial 2	CaCO <sub>3</sub> Pharmaceutical preparation 500 (200) 48 (29) ** CaCO <sub>3</sub> 500 (200) 15(10) **
-----	-----	K <sub>2</sub> CO <sub>3</sub> coating agent 500 (200) Example of 95 (77) ** trial 3 K <sub>2</sub> CO <sub>3</sub> Pharmaceutical preparation 500 (200) 70 (51) **K <sub>2</sub> CO <sub>3</sub> 500 (200) 30 (25) **	
-----	-----	(NH <sub>4</sub> ) <sub>2</sub> CO <sub>3</sub> Coating agent 500 (200) Example of 97 (82) ** trial 4(NH <sub>4</sub> ) CO <sub>3</sub> Pharmaceutical preparation 500 (200) 75 (42) ** 2CO <sub>3</sub> (NH <sub>4</sub> ) 500 (200) 37 (19) **	
-----	-----	NaCl Coating agent 500 (200) 76 (52) Example of ** trial 5 NaCl Pharmaceutical preparation 500 (200) 52 (33) ** NaCl 500 (200) 21(17) **	
-----	-----	KCl Coating agent 500 (200) 74 (58) Example of ** trial 6 KCl Pharmaceutical preparation 500 (200) 55 (47) ** KCl 500 (200) 25 (15) **	
-----	-----	CaCl <sub>2</sub> .2H <sub>2</sub> O coating agent 500 (200) Example of 96 (72) ** trial 7 CaCl <sub>2</sub> .2H <sub>2</sub> O pharmaceutical preparation 500 (200) 76 (39) ** CaCl <sub>2</sub> .2H <sub>2</sub> O500 (200) 32(17) **	
-----	-----	MgCl <sub>2</sub> .6H <sub>2</sub> O coating agent 500 (200) 92 (71) Example of ** trial 8 MgCl <sub>2</sub> .6H <sub>2</sub> O pharmaceutical preparation 500 (200) 58 (50) ** MgCl <sub>2</sub> .6H <sub>2</sub> O 500 (200) 24 (12) **	
-----	-----	CuSO <sub>4</sub> .2H <sub>2</sub> O coating agent 500 (200) 99 (82) Example of ** trial 9CuSO <sub>4</sub> .2H <sub>2</sub> O pharmaceutical preparation 500 (200) 76 (40) ** CuSO <sub>4</sub> .2H <sub>2</sub> O 500 (200) 62 (35) **	----- Contrast Nothing 0 0 The coating agent of example of ** trial 10 this invention A potassium hydrogencarbonate, potassium carbonate, A sodium hydrogencarbonate, a sodium carbonate, a calcium carbonate, an ammonium hydrogencarbonate, An ammonium carbonate, a sodium dihydrogenphosphate, disodium hydrogenphosphate, A potassium dihydrogenphosphate and the potassium phosphate are used. Them and a glycerol mono-KAPURI rate (Riken Vitamin Co., Ltd. make), A diglycerol KAPURI rate (Riken Vitamin Co., Ltd. make), diglycerol laurate (Riken Vitamin Co., Ltd. make), Deca glycerol laurate (Riken Vitamin Co., Ltd. make), prop RENGU recall laurate (Riken Vitamin Co., Ltd. make), It manufactures by coating soybean lecithin (Ajinomoto Co., Inc. make) and sorbitan stearate (Riken Vitamin Co., Ltd. make) with the respectively same approach as an example 1. It sprayed on the cucumber green peach aphid (scientific name: <i>Myzus persicae</i> Sulzer, an English name :Green peach aphid), and the rate of insect killing on the 2nd (%) was computed.

**0021** A result is shown in the 2nd table.

2nd Table Depressor Effect over Cucumber Green Peach Aphid of Coating Agent Concentration polyhydric-alcohol fatty acid ester or phospholipid Sample offering drugs (ppm)

-----	-----	(1) (2) (3) (4) (5) (6) (7) ----- KHCO <sub>3</sub> 200 10 9294 97 88
96 99 100	K <sub>2</sub> CO <sub>3</sub> ** 0 87 81 90 72 91 80 90	NaHCO <sub>3</sub> ** 15 71 72 69 66 81100 85 Na <sub>2</sub> CO <sub>3</sub> ** 8 69 58 52 49 70 92 80
8 69 58 52 49 70 92 80	CaCO <sub>3</sub> ** 0 61 52 55 53 49 70 62	(NH <sub>4</sub> ) HCO <sub>3</sub> ** 7 88 84 72 92 79
95 89 (NH <sub>4</sub> ) 2CO 3 * * 471 76 65 86 62 93 84	NaH <sub>2</sub> PO 4 ** 9 55 4854 59 77 60 70	Na <sub>2</sub> HPO 4 ** 10 49 52 71 77
4** 8 49 51 59 77 61 82 75	KH <sub>2</sub> PO <sub>4</sub> ** 11 33 48 52 61 66 58 66	K <sub>2</sub> HPO <sub>4</sub> ** 51 70 50 - 0 0 2 12 4 8 6 5 25
(1) Glycerol mono-KAPURI rate	(2) Diglycerol KAPURI rate	(3) Diglycerol laurate
(4) Deca glycerol laurate	(5) Propylene glycol laurate	(6) Soybean lecithin
(7) The coating agent of example of sorbitan stearate trial 11 this invention Potassium hydrogencarbonate, Potassium carbonate, a sodium hydrogencarbonate, a sodium carbonate, a calcium carbonate, An ammonium hydrogencarbonate, an ammonium carbonate, a sodium dihydrogenphosphate, The potassium phosphate and a potassium dihydrogenphosphate are used. Them and a glycerol mono-KAPURI rate (Riken Vitamin Co., Ltd. make), A diglycerol KAPURI rate (Riken Vitamin Co., Ltd. make), diglycerol laurate (Riken Vitamin Co., Ltd. make), It manufactures by coating deca glycerol laurate (Riken Vitamin Co., Ltd. make), prop RENGU recall laurate (Riken Vitamin Co., Ltd. make), and soybean lecithin (Ajinomoto Co., Inc. make) with the respectively same approach as an example 1. It sprayed		

on the citrus red mite (scientific name: Citrus red mite, an English name-anonychus citri McGregor), and the rate of insect killing on the 2nd (%) was computed.

**0022** A result is shown in the 3rd table.

3rd Table Depressor Effect over Citrus Red Mite of Coating Agent Concentration polyhydric-alcohol fatty acid ester or phospholipid Sample offering drugs (ppm) ----- (1)  
(2) (3) (4) (5) (6) ----- KHCO<sub>3</sub> 200 50 95 92 97 96 92 96 K<sub>2</sub>CO<sub>3</sub> \*\* 35  
80 77 86 92 90 88 NaHCO<sub>3</sub> \*\* 25 88 89 92 90 89 93 Na<sub>2</sub>CO<sub>3</sub> \*\* 20 82 80 90 88 8190 CaCO<sub>3</sub>  
\*\* 23 78 83 76 81 75 75 HCO(NH<sub>4</sub>)<sub>3</sub> \*\* 18 82 85 89 95 89 93 2(NH<sub>4</sub>)CO<sub>3</sub> \*\* 22 76 72 85 90  
85 90 NaH<sub>2</sub>PO<sub>4</sub> \*\* 20 74 77 71 77 72 77 K<sub>2</sub>HPO<sub>4</sub> \*\* 20 73 71 7275 78 75 KH<sub>2</sub>PO<sub>4</sub> \*\* 26 77  
70 75 70 75 77 - 0 0 11 9 13 18 21 12 ----- (1) Glycerol mono-KAPURI  
rate (2) Diglycerol KAPURI rate (3) Diglycerol laurate (4) Deca glycerol laurate (5) Propylene  
glycol laurate (6) Example of soybean lecithin trial 12 potassium hydrogencarbonate is used. A  
glycerol mono-KAPURI rate (Riken Vitamin Co., Ltd. make), a diglycerol KAPURI rate (Riken  
Vitamin Co., Ltd. make), Diglycerol laurate (Riken Vitamin Co., Ltd. make), deca glycerol  
laurate (Riken Vitamin Co., Ltd. make), The coating agent of this invention is manufactured by  
coating prop RENGU recall laurate (Riken Vitamin Co., Ltd. make), soybean lecithin (Ajinomoto  
Co., Inc. make), and sorbitan stearate (Riken Vitamin Co., Ltd. make) with the respectively  
same approach as an example 1. ISERIYA scale insect (scientific name: Icerya purchst Maskell,  
an English name :Cottontycushion scalc) It sprayed and the depressor effect on the 6th was  
investigated.

**0023** A result is shown in the 4th table.

4th Table Depressor Effect over ISERIYA Scale Insect of Coating Agent -----  
----- sample offering drugs Concentration A polyhydric-alcohol fatty acid Depressor effect (ppm)  
Ester or phospholipid ----- KHCO<sub>3</sub> 200 Glycerol mono-KAPURI rate + +  
KHCO<sub>3</sub> 200 Diglycerol KAPURI rate + + KHCO<sub>3</sub> 200 Diglycerol laurate + KHCO<sub>3</sub> 200 Deca  
glycerol laurate + + KHCO<sub>3</sub> 200 Propylene glycol laurate + + KHCO<sub>3</sub> 200 Soybean lecithin + +  
KHCO<sub>3</sub> 200 Sorbitan stearate + + - - - - - + +: It is completely  
extinction + . : Although extinction is not carried out, it has weakened considerably. - : With no  
effectiveness

## Procedure revision

**Filing Date** September 13, Heisei 3

## Procedure amendment 1

**Document to be Amended** Specification

**Item(s) to be Amended** 0016

**Method of Amendment** Modification

## Proposed Amendment

**0016** Next, although an example is given about the constituent of this invention, this invention  
is not limited at all by this.

Example -1

Diglycerol laurate 2g is dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of  
impalpable powder of a sodium hydrogencarbonate is added to this, and after stirring, a  
rotating type evaporator is used, a solvent is distilled and removed completely, and it is  
improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and  
considers as fluid good powder water dispersible powder.

Example -2

1g of polyglyceryl fatty acid ester is dissolved in acetone 100cc. 80g (90% of 100-mesh  
passage) of impalpable powder of a sodium hydrogencarbonate is added to this, and after  
stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it  
considers as powder, and is improved as water dispersible powder.

Example -3

Diglycerol laurate 1g is dissolved in methanol 100cc. 80g (90% of 100-mesh passage) of  
impalpable powder of a sodium carbonate is added to this, and after stirring, a dryer is used, a  
solvent is distilled and removed completely and it is improved as powder. 10g of casein soda  
powder is added to this powder, and it mixes to it, and considers as fluid good powder water  
dispersible powder.

Example -4

Glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g  
(90% of 100-mesh passage) of impalpable powder of potassium carbonate is added to this, and

after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example -5

Glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in ethanol 100cc. 80g (90% of 100-mesh passage) of impalpable powder of an ammonium carbonate is added to this, a solvent is well distilled and removed completely at a room temperature after stirring, and it considers as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example -6

Glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of an ammonium hydrogencarbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example -7

Glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of a potassium hydrogencarbonate is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example -8

Glycerol monooleate 2.5g and glycerol mono-octoate 1.5g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of potassium chloride is added to this, and after stirring, a rotating type evaporator is used, a solvent is distilled and removed completely, and it is improved as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.

Example -9

Glycerol monooleate 0.5g and glycerol mono-octoate 0.3g are dissolved in acetone 100cc. 80g (90% of 100-mesh passage) of impalpable powder of a sodium chloride is added to this, it often heats after stirring and before and after 40 degrees C, a solvent is distilled and removed completely, and it considers as powder. 10g of casein soda powder is added to this powder, and it mixes to it, and considers as fluid good powder water dispersible powder.